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OCCASIONAL PAPERS

OCLC IN RETROSPECT:

A REVIEW OF THE IMPACT OF THE OCLC SYSTEM ON THE ADMINISTRATION OF A LARGE UNIVERSITY TECHNICAL SERVICES OPERATIONS

by

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INTRODUCTION

Perhaps it is too early to review the operation of a system which is not yet fully implemented. Furthermore, there are many computer specialists--better qualified than myself--who can evaluate the technology used in the automation of technical services operations, and equally as many advanced catalogers who can more thoroughly examine the significance of an emerging shared cataloging system.[1]

This report is therefore limited to the viewpoint of one administrator of one library and is based almost exclusively on personal experience in supervising technical services operations in transition. The presentation stresses the administrative aspects of the Ohio College Library Center (OCLC) system; details of technical characteristics are kept to a minimum.[2] For more detailed descriptions and analyses of the OCLC system see the Additional References.

This report, although restricted in scope, may be of some value to other administrators not yet exposed to the system by explaining how it works in one library. For the administrators already involved in the OCLC system, these notes are offered for comparison with their own experiences.

EMERGENCE OF A REGIONAL APPROACH TO THE OCLC SYSTEM

My direct interest in the OCLC system in the Philadelphia area evolved from a visit to Columbus, Ohio, in August 1971.[3] The visit was initiated by Richard DeGennaro, the director of the University of Pennsylvania Libraries, who invited library administrators from Bryn Mawr, Drexel and Temple universities to join the Univeristy of Pennsylvania librarians in a one-day conference with Frederick Kilgour, the director of OCLC.

At that time OCLC was already producing off-line catalog cards, and had started its on-line chared cataloging system one day before the conference.

The demonstration of the OCLC system in action was impressive. The prospect of introducing serials, acquisitions and circulation systems in the near future was very attractive indeed. Back in Philadelphia, the group reviewed their impressions and agreed to study the system. The Union Library Catalogue of Pennsylvania offered a one-year sponsorship of the on-line experimental use of the OCLC system. The cost of the operations was shared by the participating libraries and by a grant from the Pennsylvania State Library, using the funds made available from Library Services and Construction Act, Title III, Library Cooperation.

The three libraries of Drexel, University of Pennsylvania and Temple began the experiment in January 1972. Each library tested the system by evolving its own approach independently of the approaches of the other two libraries. The librarians responsible for the experiment met occasionally to discuss the administrative and technical aspects of the experiment. This unstructured individualistic approach allowed for testing a number of options offered by the system.

Spiras terminals were installed in the three libraries in January 1972, and were connected to the OCLC system for one month in a guest mode, for the purpose of training personnel only. The full on-line operations started in March 1972. At Temple University, the first two months were used for training two professional librarians and three bibliographic assistants. The training itself consisted of a self-study of the operation's manual and practice in the use of the terminal; it was completed by a one-day question-and-answer session with an OCLC representative.

From the beginning of the experiment we were trying to utilize as many of the available data as possible in our pre-order and pre-cataloging searching, as well as in manual cataloging. Simultaneously with the ongoing experimentation, an organizational structure of the local network began to emerge.

Early in the summer of 1972, the very concept of the OCLC system was critically reviewed. The main concern was not primarily about the product of the system, but rather about the structure of the system itself. The possibility of the development of an on-line MARC data base system, based on the local IBM computer facilities, was investigated by some library administrators. Although the chances for success for such a system seemed good, the idea was abandoned in favor of the OCLC. The proverbial wisdom of the saying that a bird in the hand is worth two in the bush proved again to offer an overpowering argument.

A formal regional organization began with an inaugural meeting of the administrators of the participating libraries in December 1972. The group organized itself into a board of directors, consisting of the directors of the libraries of University of Pennsylvania, Drexel, Temple, University of Delaware, and Bryn Mawr, and the Union Library Catalog of Pennsylvania. The board elected its chairman and requested formation of the operations committee, composed of the associate directors and directly responsible for the implementation of the OCLC system in their own libraries. The board of directors scheduled infrequent meetings to discuss the recommendations and to review the actions taken by the operations committee. The functions of the operations committee included establishing policies and procedures related to OCLC, membership, allocation of costs, etc. A separate cataloging subcommittee reviewed all issues directly related to the shared cataloging operations. A serials subcommittee was formed in anticipation of the OCLC serials program.

The initial name of the organization, Mid-Atlantic Library Network (MALINET) was changed to Pennsylvania Area Library Network (PALINET). PALINET is completely unrelated to PRLC (Pittsburgh Regional Library Center), which has participated in the OCLC off-line cataloging services since November 1970, and which had its first on-line terminal installed late in 1971. Presently, PALINET is entering its second major phase of reorganization. Significantly expanded in size, the network is merging with the Union Library Catalog of Pennsylvania.

A brief review of some of the topics discussed by the operations committee may illustrate some types of problems tackled during the initial period of operation.

Issues concerning membership in PALINET: delineation of the geographical area of PALINET coverage not restricted by state line, the size or type of the member library, and avoidance of competition with Pittsburgh group; the problems of equal participation in PALINET decision-making processes, assistance to new members in preparing their profile; provision for technical advice, etc.

Financial oblications of each member library agreed on by the committee: charges for telephone lines and conditioning (determined by AT & T), to be

shared equally by all members irrespective of the location of each library; terminal charges for local loop and data sets (determined by AT&T) and costs of terminal maintenance (determined by Syntonic, Inc.), to be paid by each library individually; cost of usage of OCLC central facilities, based on the number of records used (determined by OCLC), paid by each library; PALINET overheads (determined by PALINET) to be shared equally by all member libraries; charges for catalog cards (determined by OCLC), for programming and profile (determined by OCLC), paid individually by each library.

PALINET is billed annually for all the services provided by OCLC. The charges are based on the anticipated number of entries processed by participating libraries. Individual libraries are charged directly for the card production and profile expenses by OCLC.

Issues concerning terminals: a terminal service agreement, effective after the expiration of a 90-day warranty, covers three calls per terminal per year at a monthly charge of $39 per terminal. Additional calls are $60 per terminal per call. This contract was extensively debated and its provisions challenged, but it finally had to be accepted without any changes. PALINET agreed to share, as a group, all costs of additional services charged to any member.

Another issue concerned sharing one terminal by more than one library. In such an arrangement, how should charges be distributed and what effect would it have on the regional approach?

TEMPLE UNIVERSITY'S EXPERIENCE: IMPLEMENTATION OF THE SYSTEM IN ONE UNIVERSITY LIBRARY

PROCESSING OPERATIONS IN THE OCLC SYSTEM

The diagrams in Figures 1-5 are provided for illustrative purposes only. The Technical Services Division maintains detailed procedures which fully describe the implementation of the OCLC system in the Temple University Library.[4]

As shown in these diagrams, we use the terminal for two kinds of searching: to identify the entry at the time of placing an order (the so-called "pre-order search") and/or to locate the OCLC entry at the time a book is received (referred to as "post-receipt search" or "pre-catalog search"). If these searches are unsatisfactory, we search once more in the National Union Catalog (NUC). We try to improve the verification process by ordering a TEST card before the item is forwarded to the catalog department.

In cataloging operations, we distinguish between Library of Congress (LC) and cooperative (COOP) entries; whenever possible, LC entries are accepted as given; COOP entries are edited or rejected.

Books are forwarded for physical processing (stamping, labeling, book pocketing, etc.) and for shelf distribution as soon as the entry is cataloged or edited. The permanent cards are filed approximately two or three weeks later.

Books with no LC or COOP entries are forwarded to the "W-collection"

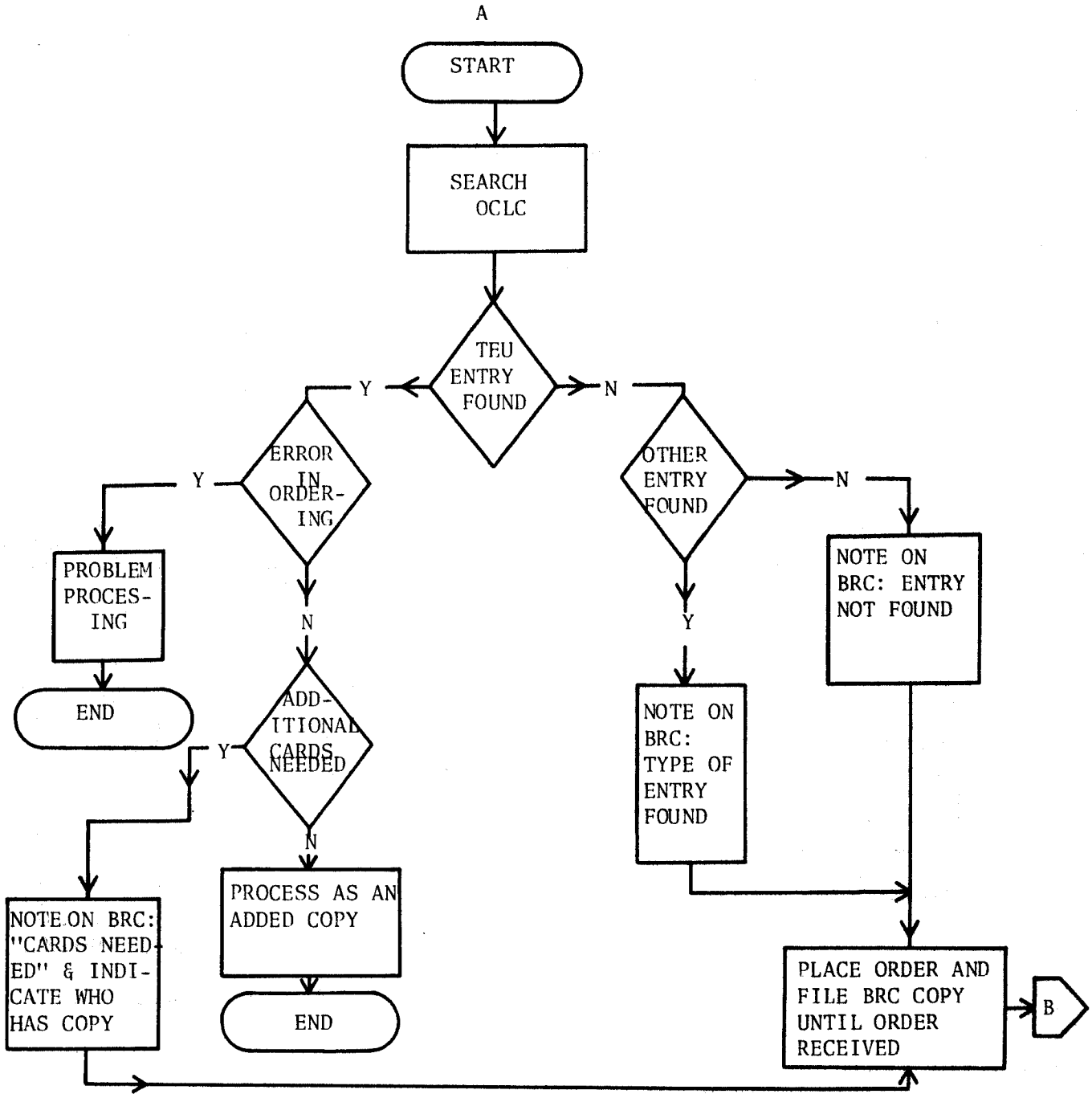


Figure 1: Pre-Order Search A

Notes: TEU=Temple University Libraries
BRC=Book request card

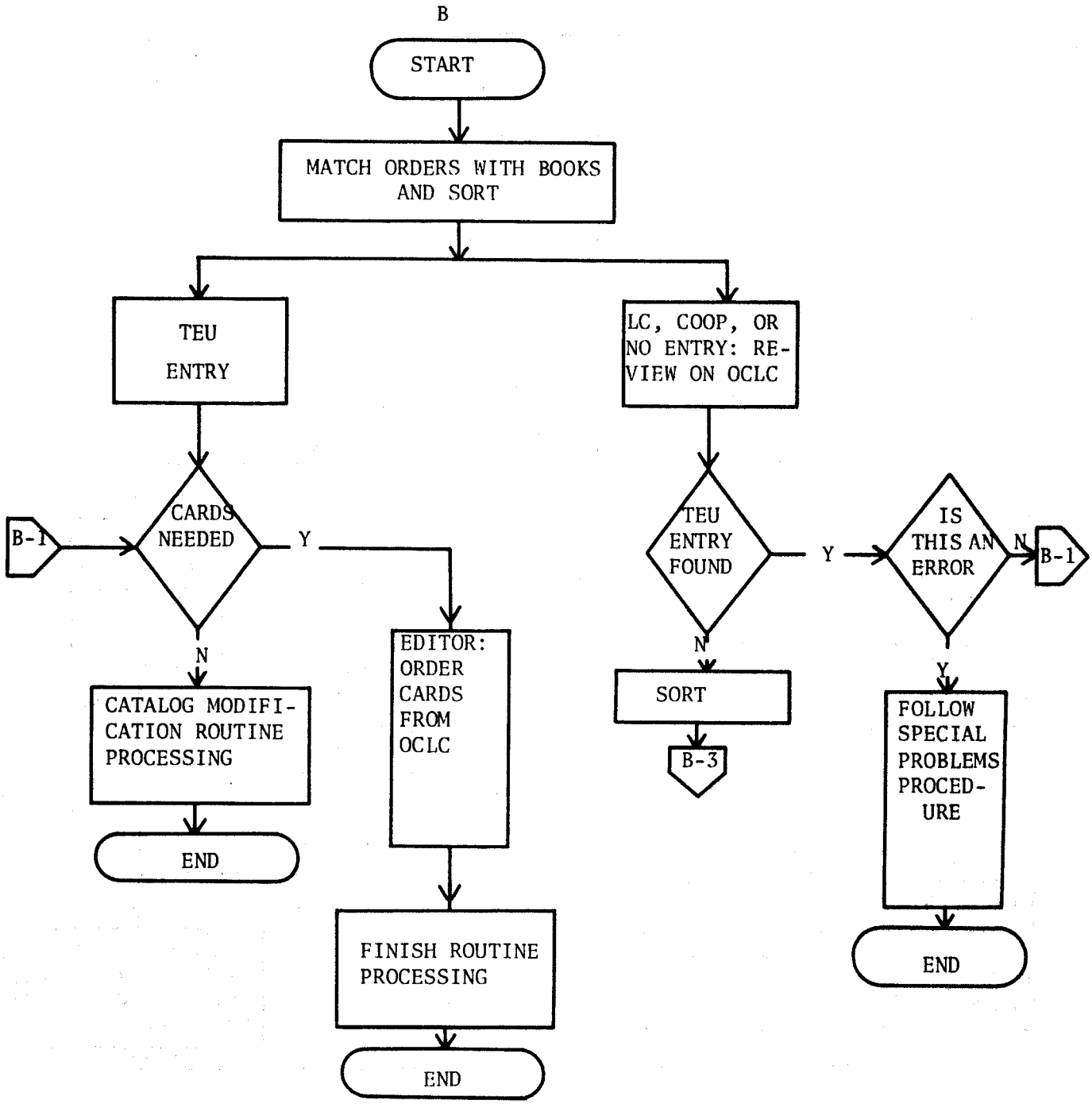
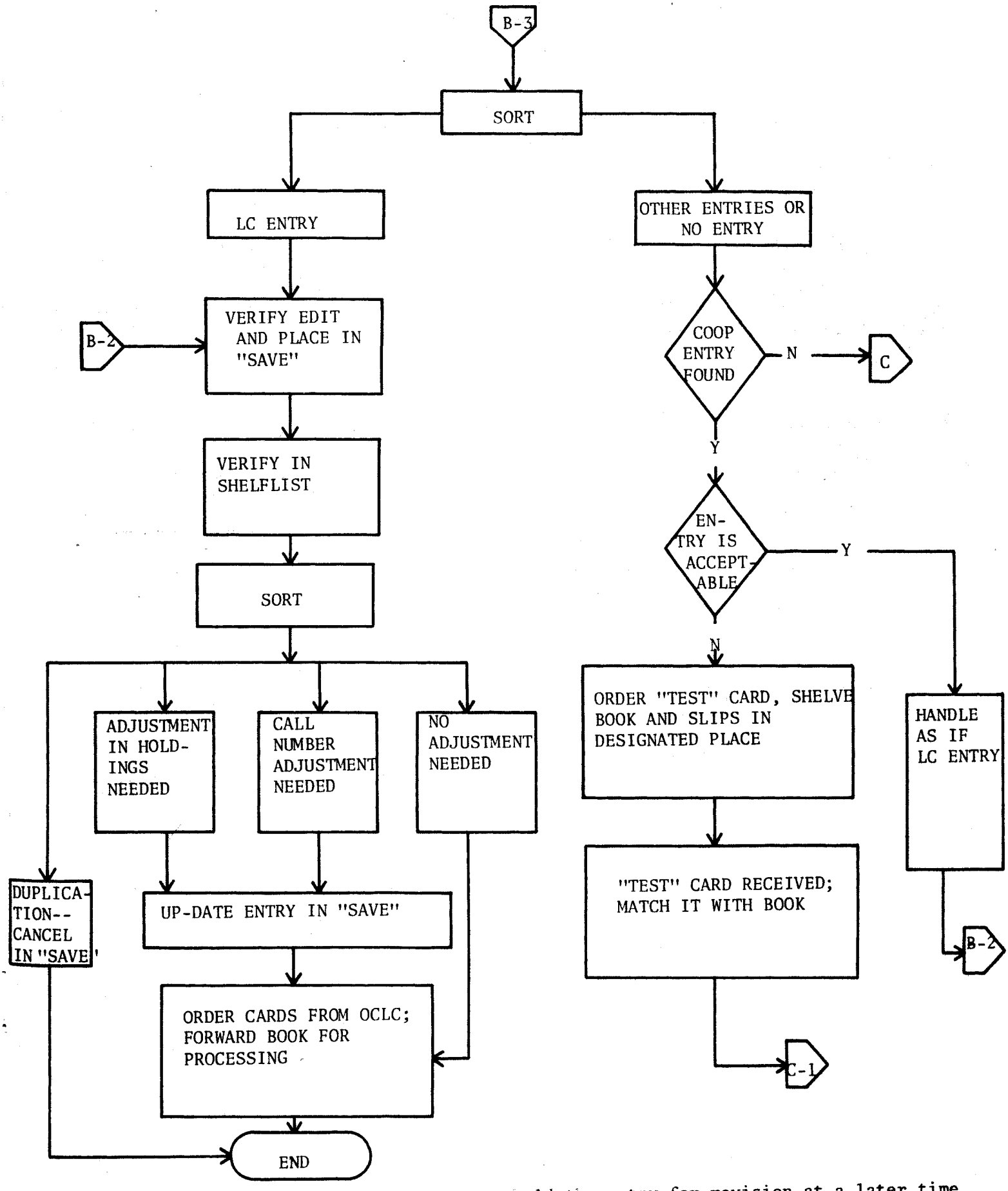


Figure 2: Pre-Catalog Search (Orders Received) B

Notes: LC=Library of Congress entry
COOP=Entry processed by a participating library

Figure 3: Pre-Catalog Search (Orders Received) (Cont.) B-3



Notes: SAVE=Provision in the OCLC system to hold the entry for revision at a later time.
TEST Card=A single card of an OCLC entry ordered for off-line processing.

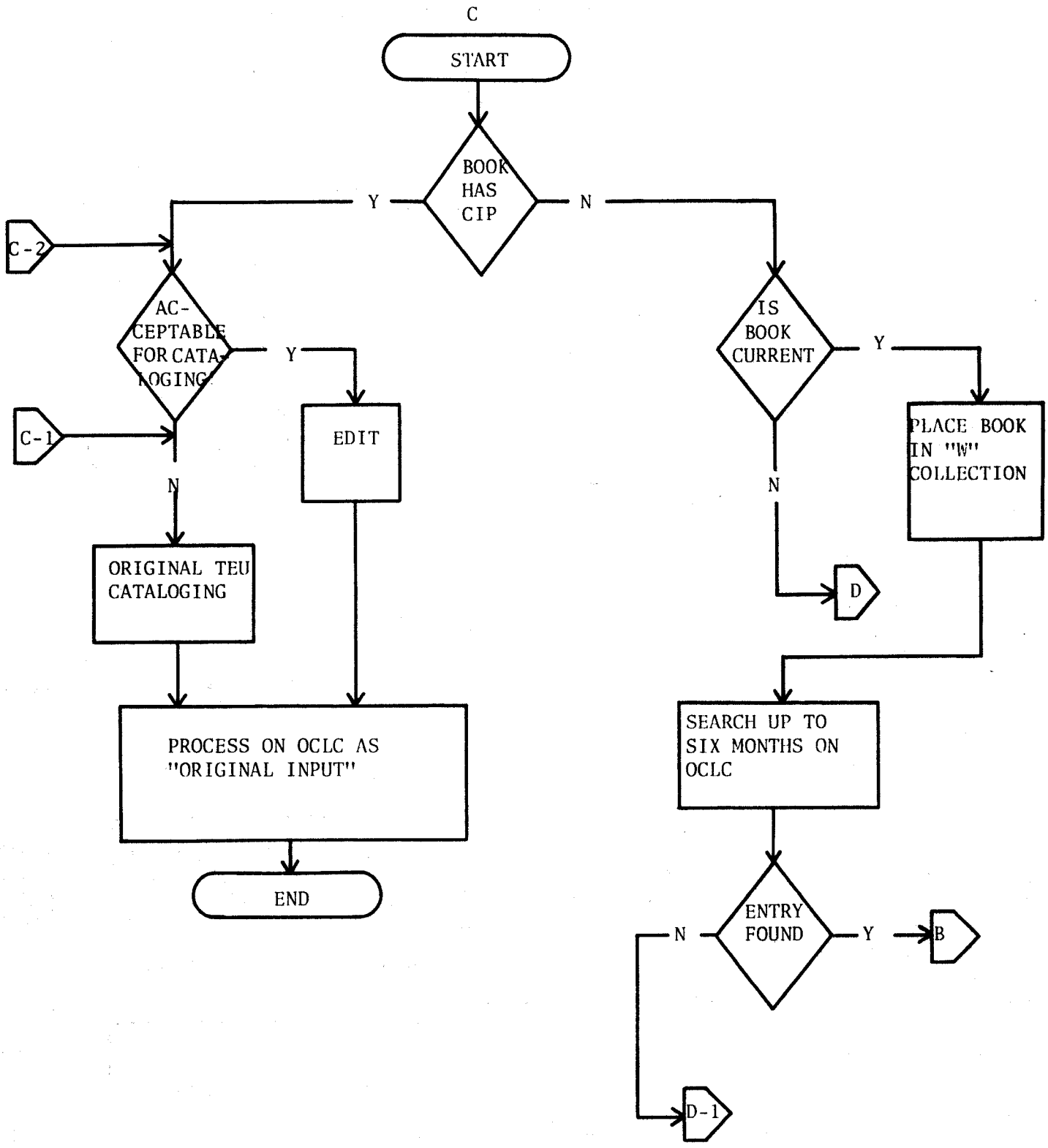
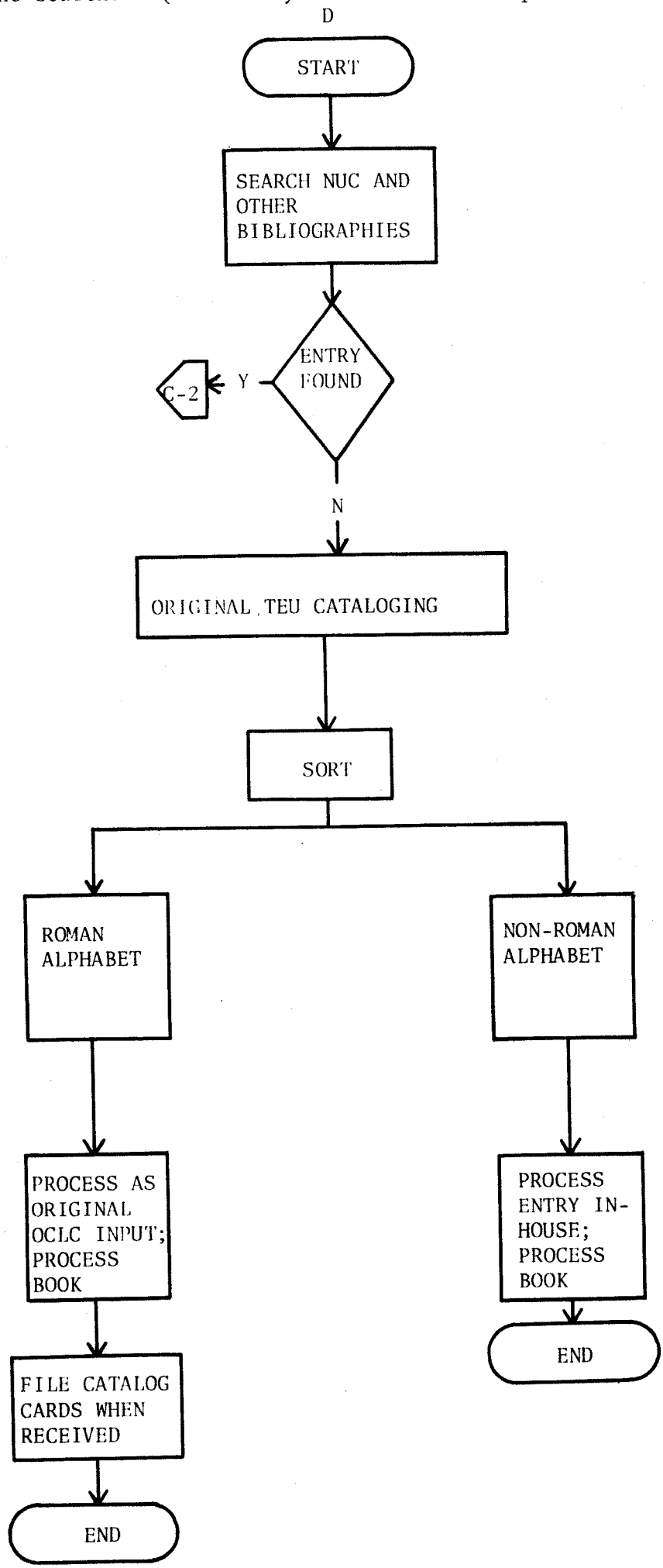


Figure 4: Book Received, No OCLC Entry Found C

Notes: CIP=Cataloging in publication entry.
ORIGINAL TEU CATALOGING=Classification and/or cataloging performed by cataloger.
"W" COLLECTION=Contains books temporarily processed and fully accessible to the library user.
ORIGINAL INPUT=Entry added to the central data base by a participating library.

Figure 5: Off-Line Search: D (OCLC Entry Not Found After Specified Number of Searches)



to await OCLC or off-line cataloging. Such books are then fully accessible to the user.[5]

PROS AND CONS OF SHARED CATALOGING

A direct comparison of manual and automated processes in technical services is very difficult. The change from one procedure to another is not a step-by-step process; the transition stretches over a considerable period of time, and a number of new modifications are introduced while the change is being made.

For these reasons, only some values of each method are discussed here. The positive approach is stressed by listing advantages of each system. Quite often, but not always, a given advantage for one method is also a disadvantage for another.

Searching Activities

Advantages of the manual approach include:

1. It provides a wider scope both through the proof slip file, covering all languages and many nonbook materials, and through the NUC indexes, extending the coverage to all imprints and to the non-LC COOP entries. This advantage diminishes with the growth of OCLC's data base.

2. It allows the searcher to annotate on the record itself various data, such as dates and sources previously searched. The searcher can also use a signaling system such as a dummy card for books waiting for the proof slip, or signals for claiming purposes. These devices reduce the number of negative searches.

3. It provides faster access to files; more than one person can use various parts of a file simultaneously, and no prior scheduling is needed for the use of such files (as contrasted, for example, with rigid scheduling needed for the use of OCLC terminals).

Advantages of the OCLC approach include:

1. Fast initial access to the entries in the file is achieved by the search-key formulae, and by searching one file only.

2. Complete update of the record is possible at the time of the searching verification.

3. Fast recall of entries compensates for some errors made in the search or in the system.

Editing Activities

Advantages of manual editing include:

1. The same editor can process a wider variety of material (e.g., non-Roman entries, serials and nonbook material), not restricted by the

imprint dates of the MARC data. Again, this advantage is directly related to the size of the data base; the larger the data base, the more effective is the on-line editing.

2. The flow of editing is independent of the work load on terminals and is not affected by a breakdown of the system.

3. Records can be prepared at the time of processing the physical volumes (e.g., cards in the public catalogs can be filed at the time of shelving the book).

4. Manual editing creates less physical fatigue and is less restricted by employees' handicaps, such as poor eyesight.

Advantages of editing on the OCLC terminal include:

1. The process is much faster since it eliminates a number of additional manual operations, such as typing, handwriting instructions, card duplication, and pre-file sorting.

2. The OCLC's data base is expanding daily by original input from member libraries and by inclusion of large files converted from other systems. This increase amounts to little over 50 percent of total input.

3. Editing is inexpensive, excluding the system's overheads.

4. The OCLC system makes available the services of more advanced editors from other libraries.

Original Cataloging

A manual system has the following advantages:

1. By itself, it is less expensive, since it requires no tagging or keying; a Xerox page can be used for instructing the typist without rewriting all the information.

2. It is more relaxed since catalogers' products need not be subject to the scrutiny of other professional catalogers throughout the country.

3. It offers more freedom in adjusting or even violating cataloging rules to meet local needs.

The OCLC system has these advantages:

1. It decreases the demand for original cataloging with the increased data base.

2. It needs fewer, but more advanced, catalogers.

3. Cooperation between libraries is improved by sharing catalogers' knowledge.

Catalog Card Production and Reproduction

In manual processing, cards can be filed in the catalogs earlier, and changes on the cards can be made more freely before duplication.

In the OCLC system, the quality of cards changes from time to time. Among the factors lowering the quality of cards is the light weight of the paper, which may cause "dog ears"; poor fusing produces smeary cards. On the whole, however, the quality is good and the cost low, thus allowing for a complete elimination of typing added entries, sorting, etc. The reduced in-house card production offers considerable long-range savings in the rental and maintenance of reprographic equipment, labor and supplies. The OCLC system completely eliminates the need for enlarging the catalog entries. Furthermore, the automated pre-file sort reduces the number of possible misfiles.

Processing Problems

A description of the emerging processing system, adapted to the OCLC requirements, cannot be complete without mentioning some of the problems encountered.

Searching problems: The searching pattern is constantly changing due to the changing content of the data bank. This affects such aspects as the frequency of re-searching; the preference in using author/title, title, or LC card number approach; and the quality of cataloging offered by different cooperating libraries. In 1975, the data base of OCLC had one million records. The MARC format includes an increasing number of German and French entries. The introduction of a new search key (first four letters in the last name, and first four letters in the title) is changing the preference of initial search from "title" to "author/title." At the same time, however, this results in lengthening the list of similar titles, which slows the search time.

Difficulty in recording all the useful data at the time of searching: When a COOP entry is found in the OCLC base during the pre-order or pre-catalog search, pertinent information such as main entry corrections, information concerning series and pertinent notes, call number, and subject entries or the OCLC control number is not recorded. To include this step in routine processing would call for a more advanced searcher, who would spend more time on this assignment; in case of an order cancellation, such effort would be wasted.

We are trying to ease this problem by ordering a single card from OCLC, known as the "TEST" card for COOP entries, at the time of the pre-catalog search. We have been looking into the possibility of photographing the entry directly from the screen by using a Polaroid camera, with an attachment designed for this purpose. We have also considered the use of a Tycom printer. Such modifications could be of help to the editors and catalogers, who at present must edit the entry on the screen, leave the terminal, verify the entry in the shelf list, and recall the entry on the screen again, to complete processing. Unfortunately, neither of the two techniques is economical.

The "W-collection": The use of the "W-collection" provides a very useful buffer for the uneven flow of material in the Technical Services Division. By keeping books with no LC card number in this collection for six months without any searching, the chances are increased for more successful searching later. Entries for books with an LC card number are searched monthly from the printout provided by the circulation system, which avoids recalling the physical volume itself. The problem of delayed cataloging provided by the "W-collection" is directly related to the pressures on the Technical Services Division for processing priorities. Up to a point, we would rather reduce the waiting period in the "W-collection" to three or four months, rather than to extend the search to books without an LC card number. This approach increases the chances for finding the entry with fewer searches.

Cataloging problems: The time gap between the editing or cataloging of a title, the processing of the physical volume, and the filing of cards in public catalogs create some difficulties, such as the following:

1. If books are shelved before the catalog cards are received, one cannot verify the receipt of shelflist cards for all entries by simply matching them with books. On the other hand, if books are not shelved until cards are received, the unshelved books may mushroom into a large, unusable collection.

2. If an error on a catalog card is found at the time the cards are received from OCLC, it might be difficult to retrieve the volume from circulation, thus delaying the process of correcting the error.

3. Since the catalog cards are received in packs sorted by different destinations, and interfiled within each such section, there is no fast way of verifying the completeness and correctness of all the tracings needed. The library is thus heavily dependent on the accuracy of OCLC.

To minimize the risk, we keep a "TO" (titles ordered) file, and we check the received cards with this file, and we sporadically thoroughly examine the content of selected packs of cards. Occasionally, such examination reveals unexpected irregularities in either omission of some cards or duplication of others.

Since the categories of entries in the OCLC data bank are not rigidly defined, we might process some titles off-line that either are in the system already or will be added to it soon. For example, the CIP entries, with no OCLC entry, could be saved until they are included in MARC tape. We process them as semioriginal, probably duplicating similar efforts in a number of other libraries, if such entries are inputted into the OCLC base. Not knowing the status of transliterated entries, we also catalog such entries off-line, again risking a duplication of effort.

Still another source of wasteful cataloging is presently caused by the MARC Deferred Tape. As of January 1975, this tape, including several thousand entries, contained fully cataloged LC entries, which may or may not exactly match similar entries already inputted to the OCLC by COOP libraries. (The match should be on all three indexes: LC card number, author/title and title.) Thus, for example, the LC entry inputted in OCLC without the LC

card number given in the book may be deferred for future visual verification. This problem, created in part by programming error, is now being corrected.

Finally, there is a fear of losing the cataloging records altogether. This may happen whenever the OCLC system is malfunctioning, and before we can take note of the "save space" allocation number for our deposited entry. This, however, does not happen too often, and the loss is limited to not more than one title temporarily in process at the time of system shutdown. More frightening is the thought of losing the records of all transactions for a given processing period due to internal problems at the OCLC. Twice we did lose all the transactions processed during one day. We were notified by the center to reorder that particular day's transactions. Again, the "TO" file is the only safeguard.

SOME STATISTICAL EVALUATIONS

Statistical data are included in this report with some degree of hesitancy. We have not yet developed a satisfactory technique for isolating similar tasks which could allow us to make a reliable comparison of activities. Some of the data cited are results of actual counting, while others are interpolations from secondary sources. (All tables in this revised report were updated in the spring of 1975.) Nevertheless, the overview provided by the tables may indicate a trend, while individual data can illustrate their relative significance in relation to other similarly gathered information.

In Table 1, the data are reasonably accurate and were used for the projections made for the fourth terminal. The number of searches also includes repeated searches. In cataloging operations, "special projects" input refers to the use of OCLC terminals for nonroutine assignments, such as search for missing entry, reclassification of old entry, etc. The use of terminals refers to the scheduled times, not the time of actual use. At the present level of operations in the Temple University Libraries, three terminals are still not enough to process all material through the OCLC, while a fourth terminal may not be needed exclusively for cataloging and related purposes.

Processing time comparisons in Table 2 indicate that searching the proofslip file is a somewhat faster operation than the similar search made through OCLC. (The proofslip file was discountinued in 1973.) The difference is explained in part by a need for a more detailed search, in which all the information provided on the screen must be transcribed immediately. This process is time-consuming. The time needed to search the proofslip file does not, of course, include the maintenance of that file. This time/cost factor is completely absent in the OCLC operation.

In cataloging activities, the OCLC has a clear advantage over manual operations in all but one task. Preparation of instructions is slower in original cataloging since it involves a full, field-by-field transcription of bibliographic data for keying-in purposes. The revision process is similar in both operations. In card production, the savings in time is most obvious, since OCLC cards are received fully processed. Tables 3 and 4 were prepared by the executive director of PALINET for the members' and potential members' information. The cost estimates in these tables are based on actual charges, and the

TABLE 1: ESTIMATED USE OF ON-LINE TERMINALS IN TEMPLE UNIVERSITY LIBRARIES

(a) Projected need for search purposes (3 terminals, 50 weeks/year)

CATEGORY	NO. OF ITEMS	NO. OF HOURS PER YEAR	NO. OF HOURS PER WEEK
Pre-Order Search: A	15,000	400	8
Post-Receipt Search: B			
Approval Plans	12,000	220	4.5
Others	6,000	175	3.5
Additional Search: C	30,000	830	16.5
Total Searches:	63,000		32.5

(b) Actual and projected need for cataloging purposes

	2 TERMINALS ACTUAL		3 TERMINALS PROJECTED		4 TERMINALS PROJECTED	
	UNITS	HOURS	UNITS	HOURS	UNITS	HOURS
Shared Cataloging (1st time use)	12,700	1414	18,500	3750	18,000	
Duplicate Use (added copies)	3,000		4,000		4,500	
Original Cataloging (1st time use non OCLC)	2,900	420	6,000	860	6,500	
Revised	18,600	440	28,500	1425	29,000	
Sub Total	37,200	2,274	57,000	6,035	58,000	
Serials Check-In				10 (initial period only)		
Pre-Order Search	10,000	1200	15,000	1625		
Pre-Catalog Search	20,000		48,000			
ILL Search	30			50		
Miscellaneous (e.g., training, etc.)	1,676			495		
Sub Total	31,706	1200	63,000	2660		
Off Line			1,500		1,000	
Total Titles			30,000		30,000	

NOT AVAILABLE AT THIS TIME

(c) Trained personnel for OCLC operations (incl. back up)

Department	Professional Assistants	Bibliographic Assistants	Clerical Assistants	Graduate Students	Other Students
Pre-Catalog	---	7	1	---	---
Catalog	5	4	1	2	1 (Off line cards)
Special Projects	2	---	1	2	---
Post-Catalog	---	---	4	---	---
Total	7	11	7	4	1

TABLE 2: COMPARISONS OF MANUAL AND OCLC PROCESSING TIMES IN TEMPLE U. LIBRARIES (Broad approximations)

(a) OCLC and manual search time (incl.: location, reproduction and annotation of entries as needed)

	OCLC (1974)	MANUAL		
		Proof Slip (1973)	NUC (now)	NUC (with 68-72 cumulation)
Pre-Order Search (Poor copy)	12 min.	10 min.	16½ min.	12 min.
Pre-Order Search (Good copy)	9½ min.	7½ min.	14 min.	9½ min.
Post-Receipt Search Initial Search - Abel Approval	8½ min.	7½ min.	13 min.	9 min.
Post-Receipt Search Initial Search - Other, e.g., gifts, cat.seps.	6 min.	12 min.	13½ min.	13½ min.
Post-Receipt Search Additional search for cataloging copy	2½ min.	No time	13½ min.	3 min.

(b) Estimated cataloging time differential per title (excluding retrieval time)

	Cataloging Process	Preparing Instructions	Revisions	Total
Proofreading				
Manual	8 min.	2 min.	1 min.	11 min.
OCLC	3 min.	1 min.	2 min.	6 min.
Editing				
Manual	15 min.	2 min.	2 min.	19 min.
OCLC	6 min.	1 min.	2 min.	9 min.
Semi-original				
Manual	40 min.	2 min.	2 min.	44 min.
OCLC	20 min. (includes off-line checking)	1 min.	2 min.	23 min.
Original				
Manual	70 min.	3 min.	2 min.	75 min.
OCLC	11 min.	4 min.	2 min.	17 min.

(c) Estimated card production time

Manual System: (from the master preparation to the full processing i.e., including sorting by files)

Originally cataloged:	15.45 min. per set of 8 cards
Minolta enlarged:	13.65 min. per set of 8 cards
Proof slip entry:	8.55 min. per set of 8 cards

OCLC System:

Full sets are produced and presorted: 4¢ per card*
(plus prorated OCLC system's overhead costs)

* Cost of catalog cards changes with the total number of cards processed by OCLC. The actual charge at the time of writing this report is 3.4¢ per card.

(d) Terminal scheduling (weekly)

(i) By Operation

Cataloging	16 hours/week
Revising	5 hours/week
Input	6 hours/week
Search	6 hours/week
Special Projects	2 hours/week
	35 hours/week

(ii) By Operator

Editors	20 hours/week
Clerk	6 hours/week
Searchers	6 hours/week
Catalogers	1 hour/week
Spec. Projects	2 hours/week
	35 hours/week

TABLE 3: CURRENT RATE SCHEDULE - OCLC COSTS AND PALINET FEES
(As of Spring 1975)

A - ONE-TIME CHARGES:	
--OCLC 100 Terminal, including installation.	$3,700.00
(OCLC provides a discount for prepayment)	
--Installation of electrical connections	_____
(each member charged at local prices)	
--Installation of communications equipment:	
Station termination $52.55	
Data set $78.85	
OCLC overhead $12.50	
Total	143.90
--Programming of format profiles and Pack Definition Tables:	
a. Standard Format - $25.00 for 10 holding libraries; $1 for each additional hold. lib.	
b. Non-standard specifications - $25.00 per hour for total programming time (staff and computer time) "Average" library - $160.00 estimate	_____
B - RECURRING CHARGES:	
--Telephone line and communication charges: Monthly AT&T rates: Lines between high density rate centers: $.89 per mile; Channel terminations, high density, 2 per line: $36.80 each; Lines between high and low (or) between low density rate centers: $2.63 per mile; Channel terminations, low density, 2 per line: $15.75 each	
--Estimated total monthly charges for network: $3,295 shared equally by all members (42 at present)	79.00/month
--Station termination, each	26.30/month
--Data set, each	57.80/month
--Terminal maintenance, per terminal (Charge begins after 90-day warranty period for terminal)	39.00/month
C - Uses made of the OCLC data base	
--First-time use of records for cataloging	.984/record
--Serials items added to holding records	.034/item
(OCLC provides discounts according to schedules determined by PALINET)	
D - Administrative expenses incurred by PALINET	
--Anticipated expenditures equally prorated per member	40.00/month
E - Special Charges	
--Catalog cards, including shipping	.034/card
--Accession lists ($10.00 minimum)	.075/item

TABLE 3 (continued)

--OCLC Marc tapes			
Tape ($5.00 credit for tapes returned)			20.00/tape
Copying charge per record:	1	- 1,000	.030/record
	1,001	- 5,000	.010/record
	5,001	- 50,000	.003/record
	50,001	-	.001/record

SOURCE:

Abbreviated version of the schedule accompanying the letter of agreement between PALINET of the Union Library Catalogue of Pennsylvania and institutions requesting membership in PALINET.

TABLE 4: AVERAGE OCLC COSTS ESTIMATES PER TITLES CATALOGED (1975/76)
(Compiled by Robert C. Stewart in PALINET NEWS, no. 5, April 1975, p.4)

TITLES CATALOGED	FIRST-TIME USES*	10% INFLATIONARY FACTOR**	CARDS+	FIXED CHARGES++	SUBTOTAL: OCLC COSTS	PALINET FEE	TOTAL COST	PER-TITLE COST
3,000	$ 2,290	$ 230	$ 710	$2,430	$ 5,660	$ 480	$ 6,140	$2.05
4,000	3,050	310	950	2,430	6,740	480	7,220	1.81
5,000	3,820	380	1,190	2,430	7,820	480	8,300	1.66
6,000	4,580	460	1,430	2,430	8,900	480	9,380	1.56
7,000	5,350	540	1,670	2,430	9,990	480	10,470	1.50
8,000	6,110	610	1,900	2,430	11,050	480	11,530	1.44
10,000	7,640	760	2,380	2,430	13,210	480	13,690	1.37
12,000	9,160	920	2,860	2,430	15,370	480	15,850	1.32
14,000	10,690	1,070	3,330	2,430	17,520	480	18,000	1.29

* 80% of titles cataloged x $.984, less 3% discount (quarterly prepayment)
** Temporary arrangement. Subject to final approval.
\+ Titles cataloged x 7 cards per title x $.034
++ Telephone lines: $950; communications equipment: $1010; Terminal maintenance: $470

NOTE: The table includes an increase of 5.1% telephone charges, instituted after the original table was published in Palinet News.

example cited illustrates the total OCLC costs for a PALINET member library with a comparable size of operation.

The in-house card production estimates given in Table 5 are the least reliable. They do, however, reflect an impact of the OCLC on this operation. The cost of producing cards varies with the equipment and also depends on minimum rates, calculated for different numbers of exposures.

The results of the tri-library experiment were reviewed at the membership meetings of the Union Library Catalogue of Pennsylvania in May 1972 and November 1973. At each meeting, the heads of cataloging departments reported on the procedures used, and on problems encountered by each library. In the final presentation, the issues and problems were listed under three separate headings:[6]

1. The list of the on-line problems included a lack of computer facilities to store negative searches, thus requiring repetitive searches. Delays in card shipments were up to 2½ weeks in a few instances, creating temporary disruption in the processing flow. Delays in the system's response to the operator's request were as much as forty-five minutes on one or two occasions, whereas the computer "down time" was as high as thirty-nine hours per terminal in a period of three months of operation in one library. Also mentioned were the delays in the delivery of terminals, and the problems created by MARC deferred tape.

2. The list of the off-line problems included a need for frequent training of personnel caused by high turnover, the "7:00 a.m. to 7:00 p.m." scheduling difficulties, and the need for adjustments of some manual procedures in the OCLC requirements.

3. A comparison of processing activities among the three libraries was based on data collected during a period of one year (1972-73) and some statistical data collected during a three-month period (August-October 1973) (see Table 6). Since then, the efficiency of OCLC and the procedures in all three libraries were changed, and Table 6 is retained in this report for illustrative purposes only.

REFLECTIONS ON THE SYSTEMS IN GENERAL

In one of his papers, Kilgour estimates that in the American university, an annual operational cost per student increases two to three times as fast as the overall increases in the national economy.[7] This is so, he maintains, because the technology of education has not yet increased the productivity of the educators. Thus, although the output per man-hour in the national economy is up 2.5 percent each year, the only components that are up in education are salaries and costs of books, equipment and plant maintenance. Furthermore, Kilgour warns that, once a university is pressed to economize, one of the first budgets to be cut will most probably be the library's.

This in itself is a very good argument for reviewing library operations. Such a review, Kilgour maintains, ought not to be limited to improvements in the existing processes, but rather should initiate a number of radical changes

TABLE 5: IN-HOUSE CARD PRODUCTION

(a) Number of titles processed per year

	NUMBER OF TERMINALS			
	-1-	-2-	-3-	-4-(3)
I. Off-Line Processed:				
-Non-Roman Alphabets	2,500	2,500	2,500	1,000
-Roman Alphabets				
Special, local cataloging (1)	1,000	1,000	1,000	500
Original Cat.	7,500	6,500	---	---
Serials(2)	1,500	1,500	---	---
Manual processing	12,000	---	---	---
	22,000	9,000	1,000	500
II. -OCLC processed	11,500	24,500	32,500	28,500
Total number of titles processed in the library	36,000	36,000	36,000(4)	30,000
Total number of:				
Master cards to be produced in-house:	24,500	11,500	3,500	1,500
Total number of individual cards (based on the average of 8 cards per master)	196,000	92,000	28,000	12,000

NOTES:
(1) Recent implementation of "099 call number field" provides for processing this kind of material.
(2) Not yet operational.
(3) Data projection based on 30,000 titles processed by the library in one year.
(4) For study purposes this projection differs from "30,000 Titles" reported in Table 1.

(b) Cost Comparison
(estimates calculated for one fully processed card, using a 6-up master; labor, supplies and rental of equipment included)

A. Master copy	
- from original cataloging: fully typed card	$ .536
- entry typed, in full, from LC copy (Dennison)*	$ .566
- edited LC copy (Dennison)*	$ .252
- edited LC copy (Polaroid paste-up)	$ .669
B. Duplication	
- Xerox 2400	$ .009
C. Card purchased from LC (estimated cost includes raising entries)	$ .168/card
D. OCLC produced and sorted cards	$ .035/card

*Equipment owned by the library--purchase cost not included; maintenance contracts are included.

TABLE 6: SOME VARIATIONS IN THE EXPERIMENTAL USE OF THE OCLC SYSTEM

(a) Description of material processed on OCLC during the first year of experimentation (1972-73)

University of Pennsylvania	Temple University
Current English imprint with an LC entry	all entries available with LC card number and all available COOP entries
Interlibrary loan searches	Interlibrary loan searches
Edited By	
Professional librarian only	Bibliographic assistants and graduate students
Shelf List Verification	
Temporary shelf list filed after the processing is completed	Temporary shelf list filed before the processing is completed
Use of "Save Space"	
Does not use	Uses up to the maximum allowed
Original Cataloging	
Not processed in OCLC	Limited to semioriginal COOP entries only

(b) Number of items processed August-October 1973

	Drexel University	U. of Pennsylvania	Temple Univ.	
LC cataloging	1,421	2,496	2,417	68%
COOP cataloging	304	453	655	18%
Original input	170	103	485	14%
				100%
Total titles cat.	1,895	3,052	3,557	
Total cards produced	19,626	26,898	29,394	
Computer down time	15 days (defective terminal)	34 hours	39 hours	

Note: In this period, Drexel University Library cataloged all its material on OCLC.

of the processes themselves, by automation.

Kilgour illustrates his point by reminding us that descriptive cataloging today does not differ much from the cataloging practiced during the Middle Ages, except perhaps for the increased number of additional rules. On the other hand, an example of the revolution in reprography indicates the possible extent of such changes. It is estimated that a fast scriber in a very efficient monastery could transcribe 300 lines of text in one day; today's printing can do the same work 2,000 times as fast. Kilgour thus argues that instead of investing our energies and our budgets in old-fashioned operations and in antiquated equipment, we should invest our talent and our money in systems such as the on-line, shared cataloging which can liberate us from the Xerox machines, catalog cards and cabinets, se-lin gadgets producing spine labels, typewriters and similar paraphernalia of twentieth-century librarianship.

The proponents of total automation are less eager, however, to project the probable costs of such systems. Nor do they want to predict the optimal capacity of such systems. It is difficult to envisage how large a system must be in order to absorb the ever-increasing volume of use once the on-line system works and is free to all library users. How many terminals will be needed to replace the public catalogs? How extensive must the access be to data banks in order to serve the library searcher, the cataloger, the reference person, the administrator and the numerous library users, all asking for data at the same time?

Furthermore, there is the issue of governance. How should the networks grow? Should they grow horizontally by building autonomous regional centers throughout the country, or vertically by constructing one huge computer center with numerous switching stations spread across the land? Arguments for each approach are almost equally convincing. A highly centralized network has all the weaknesses of monopoly; its policies may be biased, its decision-making process prejudicial, and its very existence subject to economic and political pressures. A labor dispute with, for example, the maintenance staff of the center, caused by some local issues, could shut off the library network for the whole country.

On the other hand, how can a network maintain its national uniformity and replication status if each region is free to innovate some procedures and to accept or reject others? What is the cost of maintaining a perfectly synchronized network of a dozen or so computer centers? What should be the governing structure of each region? Should the representation be based on the size of operation, on the number of terminals, on the one-vote-per-library principle, or on some other criteria?

Until these major issues are resolved at a national level, local libraries will be unable to plan their own growth and development effectively. How much of an individual library's resources can be committed to such a system? As more of a library's operations are automated, its future depends more completely on the future of the entire system.

This lack of knowledge about long-range planning has a direct impact on every library. The fact that the OCLC's source program decks are not available to participants outside of Ohio cripples the development of those libraries'

operations. For example, for the last three years we have been postponing the automation of our serials operations at Temple, hoping that such a program would soon be implemented by OCLC. We finally gave in to the mounting pressure last June, and have completed our own simplified computerized list of serial holdings. We were not, however, able to program our serials format in a way which automatically assures compatibility with OCLC's format, because such a program is not yet available to us. Even today, with the serials program being implemented by OCLC, nobody, to my knowledge, talks about a printed list of holdings that could be produced by OCLC and made available for distribution among libraries. This is a service urgently needed in our library.

Another problem created by this lack of foresight into OCLC's future concerns the planning, recruiting and training of personnel in the Technical Services Division. We are expected to have some savings in labor costs by attrition. However, attrition in a healthy department might be a very slow process, requiring long-range estimates of manpower needs. This is a difficult task if the status of automation and the installation of terminals cannot be predicted even for the next one or two years. There is also some concern about the lack of backup systems, both in the center and locally. (This problem is at least partly resolved by the duplication of some hardware in the center.) It is extremely difficult to switch back to a manual operation on short notice, in a fully automated division.

Then there is still some apprehension about the relatively little-known Xerox Sigma Computer configuration. Some of our universities have their own well-developed computer centers, and one wonders about the untapped potential advantages in using one's own computers. Should one commit his library to the programs that will not be compatible with other, better-known hardware? What about the obsolescence of equipment? Replacement of parts?

Finally, with our better understanding of the psychological makeup of a computer specialist, we become aware of a peculiar paradox which may become a problem in the future. The tremendous investment of time and money in a complex automated program of library operations makes the computer specialist very reluctant to make any modifications once the program has been implemented. This creates a new conceptual gap between a static, conservative system analyst and a dynamic, progressive librarian.

The advent of automation also opens up the whole series of questions concerning professional ethics. Network means cooperation, but cooperation at what price? On-line access to library holdings increases interlibrary loan activities, sometimes putting heavy burdens on larger collections. There is also the issue of helping the not-so-wealthy libraries to join the network by sharing equally with them the added costs of communication lines. Shared cataloging implies original input to new titles; how long can the library wait for MARC or COOP entry before doing the job in-house? With the decreased duplication of expensive cataloging, the market for catalogers will change, putting a high price on fewer, but better, catalogers. Will human resources be shared? Will university administration approve such far-fetched cooperation?

Meanwhile, the OCLC system works; it works extremely well under the given circumstances. Most of the issues raised in this section are more rationalized than experienced, and these frustrations do increasingly express the impatience

with a slow rate of change, rather than with changes themselves.

THE IMPACT OF RECENT DEVELOPMENTS

To say that the OCLC project is a success is obviously an understatement. The concept of an on-line shared cataloging network is now well received, and its acceptance is dramatically illustrated by a spectacular increase of participating libraries. It is, therefore, proper to identify the highlights of the recent developments and to estimate to what extent this expansion of OCLC will affect individual library operations.

The most striking development is, of course, the change in OCLC's size of operations.[8] Early in 1975, more than 300 institutions representing some thirty states participated in the network, with OCLC's operational budget at approximately $10 million. The data bank expansion is truly spectacular. A huge on-line catalog containing over one million titles has been built up from MARC's extensive bibliographic records file, and the participants' input, which is fast approaching one million (approximately 779,000 first-time uses were reported for fiscal year (FY) 1974). Kilgour foresees in this dramatic growth the beginnings of redefining librarianship itself. Although the magnitude of this spectacular growth may not impress everyone equally, its impact on traditional operations must be acknowledged. In the field of catalog card production alone, the growth is significant. For example, on February 25, 1975, participating libraries cataloged 13,188 books on the system, for which the center produced 90,347 cards.[9] This operation has already had a clear impact on the card production services offered by the Library of Congress and by various commerical companies. OCLC's card service to participating libraries is perhaps the first easily noticed saving in their internal operations. Furthermore, at the end of FY 1974, OCLC listed 2½ million on-line locations. This has a very significant impact on the use of terminals for interlibrary loan operations; the OCLC file is fast approaching the status of a national union catalog.

The rapid growth of operations has necessitated modifications in OCLC's hardware which, in turn, will further augment the rate of expansion. Recently installed in the center is the Sigma 9 computer used for processing all on-line tasks, while the older Sigma 5 computer is exclusively dedicated to card production. This change in the equipment was introduced just as the processing delays, caused by overloads, began to affect all the operations seriously.

The other possible modification that may be of interest to users is the local use of a printer. This equipment can be installed at the terminal and can be of two basic types: (1) a complete printer unit, designed exclusively for printing, or (2) a unit utilizing a standard office typewriter, which can also be used for other, manual typing when not connected with the terminal. A number of models compatible with OCLC are now commercially available. However, some of us may find these models still too expensive, too slow, too noisy and too limited in their printing applications to be used routinely. OCLC is presently also investigating the possibility of

using less expensive terminals designed for searching purposes only. The cost of such terminals will undoubtedly be a crucial factor in the decision to extend the use of the terminals to the public sectors of the library (i.e., public service units).

Closely related to the physical expansion of the network is the change in the cost structure of the services. The most obvious is, of course, the economy of scale which results in a reduced rate of rise of per unit library cost. This is evident, for example, in the reduction of charges for their first-time use to the Ohio members of the center from $2.00 to $1.69 per entry.

However, this growth also has its own price tag. The expansion of the utility of on-line search for purposes other than cataloging necessitated considering a new search-key charge of 2.2¢ per search (officially announced and later suspended), and a new, although fully expected, charge for serials check-in of 3.4¢ per each issue of a journal checked.

The most significant change is perhaps the rapidly changing scope of the OCLC services. This change is evident not merely in an ever-increasing rate of new additions to the data base of the network, but also in the type of entries being added. The increase in the number of titles in French and German and the inclusion of serials and nonprint entries (e.g., phonorecords), together with anticipated retrospective LC cataloging, are the most obvious examples of this expanded scope.

OCLC's current cooperation with the Association of Research Libraries (ARL) on the CONSER project will by itself produce some 200,000 serial records; it is hoped they will be available soon.

The Federal Libraries Experiment in Cooperative Cataloging (FLECC), in its cooperation with the OCLC-TYMSHARE Service, can provide dial-up access to OCLC from anywhere in the world over standard telephone lines. This development will open up the OCLC facilities to libraries geographically isolated and away from heavy concentrations of libraries.

The characteristics of the OCLC growth are also evident in the growth of PALINET. As of March 1975, the membership in the consortium had quadrupled to a total of forty-two members, together using fifty-six terminals. The membership includes large and small academic libraries, public and special libraries located in Pennsylvania, New Jersey, Delaware and Maryland. The growth is facilitated by a state grant, allowing for the extension of the OCLC network to district libraries. The organization itself is in the process of a legal merger with the Union Library Catalogue of Pennsylvania. With a newly appointed executive director, the once-voluntary three-library experiment has quickly become a $500,000 cooperative.

Temple University's own growth in using OCLC is purposefully restrained. Following the basic concept of a gradual automation of technical services operations, the library acquired a third terminal in the fall of 1974, thus further phasing out manual editing and in-house card production. Although the overall number of titles processed is now reduced to 30,000 per year, the access to the terminals is still too limited to allow for a complete

switch to on-line cataloging. Most of the professional cataloging is still processed manually, although each cataloger is processing a few titles per week for input to OCLC.

Among the more important procedural changes illustrated in Figures 1-5 are: (1) an improved handling of entries processed for the second time (e.g., first copies of titles previously cataloged for main collection); (2) a gradual decrease of the use of TEST cards, and (3) a careful increase in the acceptance of entries cataloged by other participants in the network. The initial concern about the problems of rejection of automation by the library staff seems to be behind us.

All these changes are directly related to the increased number of titles added daily to the data base. Faster processing of new titles by OCLC participants, together with a larger percentage of all entries processed on-line by Temple University Library, reduces the instances of shelflist duplications. The improved quality of cataloging further allows easier acceptance of the COOP entries, thus increasing the benefits of automation. The full computerization of the technical services operations, however, is still years away. Although serials programs are finally near implementation, the retrospective transfer of present serials holdings from Kardex to OCLC will not be accomplished soon. As already mentioned, we have recently completed a computerized list of periodical holdings in our library, using our own university's computer center. Other automated operations developed locally include the circulation system, computer-assisted monthly statistics and analyses of bibliographic growth, and performance evaluation of other technical operations. None of these programs is compatible with OCLC, since OCLC's development has not yet reached that stage. We may be forced to go even further into local automation of some activities in acquisition and bindery, notwithstanding the long-range plans of OCLC. The automation gaps within departments of the same division of our own library began to create procedural and even personnel problems, forcing us to develop some limited, parallel automated procedures. In this sense, OCLC is not yet keeping pace with the demands of modern library management needs.

Our operational costs of processing material through OCLC average approximately $35,000 per year. This amount does not include various manual operations needed to complete the processing of orders and physical volumes. Our present cost benefits, in addition to the savings received from the elimination of proofslip files, are primarily in the use of less expensive and smaller in-house card production and indirectly in some reduction in the staffing of the division. We still must produce catalog cards for non-Roman alphabets, by enlarging the entries from NUC or by typing the master cards ourselves. For this task, we now use a modified Dennison enlarger ("Cardmaster," a product of Knoxville Company), which produces much better cards than the Minolta enlarger used in the past.

It seems that with the increased computerization of technical operations, the costs of automation are increasingly hidden in the actual use of the available services. The efficiency of procedures utilizing the system and the motivation of staff in the implementation of these procedures became a much more critical factor in costing the operations.

Since the writing of the original report in 1973, the changes in the OCLC's policies and procedures can be roughly grouped into operational and organizational ones. Some of the resulting problems have already been resolved, others are still causing some difficulties.

The list of operational problems is headed by the perennial fear of the repetition of the "June Disaster," the Black Tuesday of 1974, when all the entries processed that day were lost by the computer. This misfortune may not be repeated again, yet the experience is similar to the dread of fire or vandalism of catalogs. What kind of protection can be devised against these potential losses? The inventory microfilming of the public catalogs and shelf lists is one distasteful necessity; the maintenance of temporary slips for the duration of the dialog with OCLC is another built-in inefficiency. But what about safety of the data banks themselves?

A related, although much less dramatic problem is the unexpected down time of equipment, especially after regular working hours, on weekends and in evenings. In such cases, the special scheduling for overtime is upset by using the staff for other, manual operations that could be performed easily and less expensively during the regular working hours.

Another problem is the physical limitation of the programming format in its provision for recording holdings on the catalog cards. The present allocation of twenty-one characters is not sufficient, forcing manual transcription of data on the shelf list. Consequently, the on-line approach is not yet ready to replace the traditional mammoth, the shelf list.

Ironically, speeding up the processing of entries through OCLC may at the same time slow down overall operations, by increasing the danger of duplication of records. Thus, for example, the entry already processed and kept in "save" too long may become a duplicate without the cataloger's knowledge if another library inputted the same entry into the system, while the first entry was still sitting in the "save." Cataloging LC entry ahead of MARC's own tape offers another potential cause of duplication. Although the terminal response time was markedly improved with the installation of new hardware in OCLC (dropping from 25.3 sec/entry to 7.8 sec/entry), the actual length of a search through a terminal may continue to increase. This problem is caused by an ever-growing list of similar or slightly altered title entries requiring more extensive and slower searching.

At present, most of the organizational problems are theoretical in nature. These include drafting a policy stand on the uniform title. LC currently adds original titles for works published in English as added entries, while the Japanese, Russian and Hebrew transliterated titles are placed in the position of a uniform title. Uniform titles as main entry are a standing practice of LC, with no additional tracings provided for title; on the other hand, uniform titles in music have the title traced as "Title II." The OCLC user has an option of tracing or deleting such uniform titles and their tracings; although the uniform title main entry in music is mandatory, others are only desirable. Temple University Library does not make uniform titles for original works published in English, but it follows the LC practice in all other cases. Not yet resolved is a similar discrepancy on the choice and form of main entry as practiced by LC and the National Library of Medicine.

The OCLC policy on the use of ISBD is not yet fully formulated. It is therefore feasible that some libraries may choose the format which requires fewer cataloging cards. As a result of this permissive policy, the library catalogs will have more and more of a mixture reflecting new and old cataloging practices. (ISBD was, however, fully implemented by September 1, 1975). This is further augmented by the pragmatic rule to fullow the LC practice of recataloging the entry only when the cataloger becomes aware of a need for such reclassification in each individual case.

The issue of quality control is becoming increasingly troublesome. In addition to the variation in the cataloging rules mentioned above (each introducing inconsistencies) one becomes concerned about the errors in production and distribution of catalog cards. At times we have received cards produced for other libraries, or have not received complete sets requested by ourselves. The instances of errors of this kind were few indeed, yet since the cards are received already alphabetized and arranged by catalogs, the verification of their completeness becomes an almost impossible task.

All in all, with the increased volume of material processed through OCLC, the dependence on the network and a trust in the quality of its product increase significantly; at the same time, the organizational and bureaucratic growth of the system decreases the individual library's own participation in the policy- and decision-making processes.

A review of literature suggests still other types of issues relating to the success of OCLC as a network. These include: (1) the future place of national libraries in the regionally developed bibliographic networks; (2) the form of governance of such networks, especially in terms of their relationship to national organizations such as ALA and CCLN (Council for Computerized Library Network); and (3) the probable testing of antitrust legislation by a single library, which might be denied network services if it is not affiliated with the member organizations. All these issues are the natural product of the revolutionary changes in librarianship, characterized by a rapid growth of nonprofit-oriented computerized networks of interlibrary cooperation. The only way to avoid the challenge of progress is to ignore it and instead to provide supervision of library growth at a negative rate, toward an everlasting peace of mind in obsolescence.

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I wish to acknowledge the assistance of my colleagues at Temple University, especially Mary Gross, Linda Rosenstein, Pamela Thaxter, and Wilbur

Trautman, heads of departments in the Technical Services Division, for their help in gathering and verifying statistical data used in the original report and its present updated version.

2. The statements concerning technical aspects of the OCLC system are based on various documents published by the staff of the OCLC. Some of the information used in this report is also discussed in Stewart, Robert C. "Cataloging with a Computer: OCLC Comes to Pennsylvania," Pennsylvania Library Association Bulletin 28:9-15, Jan. 1973.

3. Background material for this section consists of minutes of meetings, memoranda, letters and reports issued by various librarians who have been directly involved in PALINET activities.

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VITA

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